

the 30th, the Red River at 6 p. m. was 2.6 feet below zero and 3.6 below the lowest water on record for August.

During the month navigation was closed on the Mississippi River, only one light draft boat running between Shreveport and Coushatta.

STAGE OF WATER IN RIVERS.

The following table shows the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence; and the monthly ranges:

Heights of rivers above low-water mark, September, 1898.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Height.	Date.	Height.	Date.	
<i>Red River.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>
Shreveport, La.	29.2	1.9	1	—2.5	1, 27-30	4.4
<i>Arkansas River.</i>						
Fort Smith, Ark.	22.0	10.8	27	—0.2	20-23	11.0
Little Rock, Ark.	23.0	10.5	30	3.3	23	7.2
<i>Missouri River.</i>						
Fort Buford, N. Dak.	25.0	7.0	1	6.3	30	0.7
Bismarck, N. Dak.	75.0	2.8	3	2.0	25-30	0.8
Pierre, S. Dak.	13.0	0.0	1	—3.9	29, 30	3.9
Sioux City, Iowa	18.7	7.0	1, 2	5.3	27, 28	1.7
Omaha, Nebr.	18.0	7.0	1, 2	5.4	28, 29	1.6
Kansas City, Mo.	21.0	7.8	1	5.5	28	2.3
<i>Mississippi River.</i>						
Saint Paul, Minn.	14.0	3.1	19, 20	2.7	8, 9	0.4
La Crosse, Wis.	10.0	2.4	10, 11	1.8	2, 3	0.6
Dubuque, Iowa	16.0	2.2	12-14	1.6	2-5	0.6
Davenport, Iowa	15.0	1.0	{12-19, 22-24, 30}	0.8	{1-9, 27-29}	0.2

Heights of rivers—Continued.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Height.	Date.	Height.	Date.	
<i>Mississippi River—Continued.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>
Keokuk, Iowa.	14.0	0.8	1, 23, 24	0.3	9-12	0.5
Hannibal, Mo.	17.0	1.4	1	1.0	10-12	0.4
Saint Louis, Mo.	30.0	5.2	2	3.4	21, 22	1.8
Cairo, Ill.	40.0	8.3	21	4.7	5	3.6
Memphis, Tenn.	33.0	4.9	24	2.6	7, 8	2.3
Vicksburg, Miss.	41.0	5.2	1, 2	1.2	11, 12	4.0
New Orleans, La.	13.0	4.4	5	2.9	13	1.5
<i>Ohio River.</i>						
Parkersburg, W. Va.	38.0	6.0	4	0.7	23, 24	5.3
Cincinnati, Ohio	45.0	10.3	8	3.8	1	6.5
Louisville, Ky.	24.0	5.6	9	2.2	1	3.4
<i>Cumberland River.</i>						
Nashville, Tenn.	40.0	2.6	14, 15	0.6	8-11, 23	2.0
<i>Tennessee River.</i>						
Chattanooga, Tenn.	33.0	12.7	15	2.4	29	10.3
Knoxville, Tenn.	29.0					
<i>Monongahela River.</i>						
Pittsburg, Pa.	22.0	7.2	1	5.4	4	1.8
<i>Savannah River.</i>						
Augusta, Ga.	32.6	23.0	2	6.8	9, 26, 30	16.2
<i>Willamette River.</i>						
Portland, Oregon	15.0	5.1	1	2.6	19, 20	2.5
<i>Susquehanna River.</i>						
Harrisburg, Pa.	17.0	4.4	19	1.5	10, 11	2.9
<i>Alabama River.</i>						
Montgomery, Ala.	48.0	7.2	14	0.7	29, 30	6.5
<i>James River.</i>						
Lynchburg, Va.	18.0	7.5	13	0.8	30	6.7
<i>Sacramento River.</i>						
Red Bluff, Cal.	22.0	1.8	12	0.8	27-30	1.0
Sacramento, Cal.	25.0	9.8	14	8.2	30	1.6
<i>Des Moines River.</i>						
Des Moines, Iowa	19.0	3.0	1-3	2.8	10-29	0.2

ATMOSPHERIC ELECTRICITY.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

East of the Rocky Mountains thunderstorms were reported as follows: In the greatest number of states, 20, on the 15th and 16th; in 15 to 19 on the 6th, 7th, 10th, 11th, 13th, 22d, 24th, and 25th; in 10 to 14 on the 1st, 5th, 8th, 9th, 12th, 18th, 19th, 20th, 21st, 23d, 28th, 29th, and 30th; in 5 to 9 on the 3d, 14th, 17th, 26th, and 27th; and in 4 on the 2d and 4th.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 21, in Florida; on 15 to 19 in Michigan, Missouri, New York, and Texas; on 10 to 14 in Illinois, Indiana, Iowa, Kansas, Minnesota, Nebraska, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia; on 5 to 10 in Alabama, Arkansas, Connecticut, Georgia, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Jersey, Oklahoma, South Dakota, West Virginia, and Wisconsin; and on 1 to 4 in Delaware, District of Columbia, Indian Territory, New Hampshire, Rhode Island, and Vermont.

West of the Rocky Mountains thunderstorms were reported in Arizona on the 1st, 2d, 19th to 28th; in California on the 1st, 2d, 3d, 5th, 6th, 11th, 12th, and 15th; in Colorado on the 2d, 3d, 4th, 16th, 23d, 27th to 30th; in Idaho on the 6th and 7th; in Montana on the 6th, 7th, 8th, 11th, 12th, and 16th; in Nevada on the 2d to 6th, 11th, 13th to 16th, and 29th; in New Mexico on the 16th, 20th, 24th, 25th, and 27th; in Oregon on the 5th to 9th, 11th, 19th, 20th, and 29th; in Utah on the 5th, 6th, 7th, 11th, 15th, 16th, 23d, 27th to 30th; in Washington on the 5th to 9th, 11th, 16th, 17th, 19th, 20th, 28th, and 29th; in Wyoming on the 3d, 4th, 5th, 11th, 16th, and 29th.

AURORAS.

Auroras were reported as follows: 1st, Sault Ste Marie, Mich.; Saint Vincent, Minn.; Bismarck and Dickinson, N. Dak.; Hayward, Wis. 2d, Sault Ste Marie, Mich. 5th, Sault Ste Marie, Mich.; Saint Vincent, Minn.; Miles City, Mont. 6th, Warren, Minn.; David City, Nebr.; Shawano, Wis. 7th, Julesburg, Colo.; New London, Conn.; Rushville, Ill.; Alta, Iowa; Winthrop, Mass.; Calumet, Sault Ste Marie, and Thornville, Mich.; Fergus Falls and Saint Vincent, Minn.; Lynch, Nebr.; Hightstown, N. J.; Bismarck, Napoleon, and New Salem, N. Dak.; Pierre, Rapid City, and Watertown, S. Dak.; Depere and Shawano, Wis.

8th, Julesburg, Colo.; Greenfield Hill and Storrs, Conn.; Cresco, Iowa; Belfast, Eastport, Gardiner, and Orono, Me.; Boston, Cambridge, Concord, Hadley, Leeds, Royalston, Taunton, and Winthrop, Mass.; Sault Ste. Marie and Thornville, Mich.; Fergus Falls and Warren, Minn.; Miles City, Mont.; Lynch, Nebr.; Bethlehem, Brookline, Nashua, and Sanborn-ton, N. H.; Turin, N. Y.; Ashley, Forman, and Jamestown, N. Dak.; Pierre and Spearfish, S. Dak.; Burlington and Vernon, Vt.; Barron, Wis. 9th, Lewiston, Me.; Cambridge and Hadley, Mass.; Havre and Helena, Mont.; Malone, N. Y.; Dickinson, N. Dak.; Spearfish, S. Dak.

10th, Concord, Mass.; Turin, N. Y.; Vernon, Vt.; Barron, Wis. 11th, Leeds, Mass.; Paterson, N. J. 13th, Eastport, Mayfield, and Orono, Me.; Concord, East Templeton, and Leeds, Mass.; Plymouth, N. H.; Hartland and Vernon, Vt. 14th, Eastport and Mayfield, Me.; Dassel, Farmington, and Saint Olaf, Minn.; Hayward, Wis. 15th, Belfast, Me. 16th, Youngstown, Ohio. 17th, Greenfield Hill, Conn.; Collegeville, Minn.; Baldwinville, N. Y.; Wild Rice, N. Dak.; Youngstown, Ohio. 19th, Somerville, N. J. 22d, Tenafly, N. J.; East Sound, Wash. 26th, Bear Lake, Mich.; Ashley and Fort Stevenson, N. Dak. 27th, Paterson, N. J. 28th, Cambridge, Ind. 29th, Angola, Ind.